Appendix B: Glossary of Acronyms and Terms

O	**OASIS**	Obtain Availability Services Information System - A BellSouth front-end processor which acts as an interface between COFFI and RNS. This system takes the USOCs in COFFI and translates them to English for display in RNS.
	OASISBSN	OASIS software contract for feature/service
	OASISCAR	OASIS software contract for feature/service
	OASISLPC	OASIS software contract for feature/service
	OASISMTN	OASIS software contract for feature/service
	OASISNET	OASIS software contract for feature/service
	OASISOCP	OASIS software contract for feature/service
	ORDERING	The process and functions by which resale services or unbundled network elements are ordered from BellSouth as well as the process by which an LSR or ASR is placed with BellSouth.
	OSPCM	Outside Plant Contract Management System - Provides Scheduling Information.
	OSS	Operations Support System - A support system or database which is used to mechanize the flow or performance of work. The term is used to refer to the overall system consisting of hardware complex, computer operating system(s), and application which is used to provide the support functions.
	OUT OF SERVICE	Customer has no dial tone and cannot call out.
P	**POTS**	Plain Old Telephone Service
	PREDICTOR	The BellSouth Operations system which is used to administer proactive maintenance and rehabilitation activities on outside plant facilities, provide access to selected work groups (e.g. RRC & BRC) to Mechanized Loop Testing and switching system I/O ports, and provide certain information regarding the attributes and capabilities of outside plant facilities.
	PREORDERING	The process and functions by which vital information is obtained, verified, or validated prior to placing a service request.
	PROVISIONING	The process and functions by which necessary work is performed to activate a service requested via an LSR or ASR and to initiate the proper billing and accounting functions.
	PSIMS	Product/Service Inventory Management System - A BellSouth database Operations System which contains availability information on switching system features and capabilities and on BellSouth service availability. This database is used to verify the availability of a feature or service in an NXX prior to making a commitment to the customer.
	PSIMSORB	PSIMS software contract for feature/service
Q		
R	**RNS**	Regional Negotiation System - An internal BellSouth service order entry system used by BellSouth Consumer Services to input service orders in BellSouth format.
	RRC	Residence Repair Center - The BellSouth Consumer Services trouble receipt center which serves residential customers.
	RSAG	Regional Street Address Guide - The BellSouth database which contains street addresses validated to be accurate with state and local governments.
	RSAGADDR	RSAG software contract for address search
	RSAGTN	RSAG software contract for telephone number search

Appendix B: Glossary of Acronyms and Terms

S	**SOCS**	Service Order Control System - The BellSouth Operations System which routes service order images among BellSouth drop points and BellSouth Operations Systems during the service provisioning process.
	SOIR	Service Order Interface Record - any change effecting activity to a customer account by service order that impacts 911/E911.
T	**TAFI**	Trouble Analysis Facilitation Interface - The BellSouth Operations System which supports trouble receipt center personnel in taking and handling customer trouble reports.
	TN	Telephone Number
U	**UNE**	Unbundled Network Element
V		
W	**WTN**	A unique identifier for elements combined in a service configuration
X		
Y		
Z		
Σ		Sum of:

Appendix C

BELLSOUTH'S AUDIT POLICY:

BellSouth currently provides many CLECs with audit rights as a part of their individual interconnection agreements. However, it is not reasonable for BellSouth to undergo an audit for every CLEC with which it has a contract. As of September 9, 1998, that would equate to over 470 audits per year and that number is continually growing. BellSouth is in the process of developing a proposed set of reasonable controls associated with individual CLEC audits. In addition, BellSouth will conduct a comprehensive audit of the aggregate level reports for both BellSouth and the CLECs for each of the next five (5) years, to be conducted by an independent third-party. The results of that audit will be made available to all the parties subject to proper safeguards to protect proprietary information. This aggregate level audit includes the following specifications:

1. the cost be borne 50% by BellSouth and 50% by the CLECs
2. the independent third party auditor shall be selected with input from both BellSouth and the CLECs
3. the scope of the audit shall be jointly determined by Bellsouth and the CLECs.

BellSouth reserves the right to make changes to this audit policy as growth and changes in the industry dictate.

Summary of Workshop Issues

The brief summary below covers the highlights of the LPSC workshop held on November 30 and December 1. What follows is divided into three parts:

(A) The statistical issues that were "ready to call," based on the discussion at the workshop and our examination of BellSouth's data;

(B) Those issues that were "still open" and for which we have committed to do more work for the Commission.

(C) Finally, some highlights are given as a reminder of the statistical discovery process so far.

At the workshop itself many of these same points were made. Even so, they have been restated and updated for the record, weaving in the thinking and work we have been doing since then. Only material not already included in our Interim Report and in the related detailed presentation has been provided.[1]

A. Ready to call

There were five areas that I consider ready to settle. These are listed below and then discussed in detail:

1. When to modify operating measurement systems.

2. How to adjust so as to compare "like-to-like."

3. Feasibility and need for deep testing.

4. Improving the BST tests to be sensitive to CLEC variance differences.

5. What significance level to use and whether to do two-sided testing.

For the most part the comments contrast the LCUG and BST approaches. The pooled variance approach (called the FCC approach in our Interim Report to the Commission) is so similar in performance to the LCUG that it is dealt with only indirectly.

[1] Separately, we have addressed in detail the thoughtful views of Dr. Colin Mallows (and others) that were raised at the workshop.

1. When to modify operating measurement systems. – The LCUG test is a "one size fits all approach" and requires that data be available in a highly disaggregated form. This, however, is by no means the only way data for tests for disparate treatment have to be provided.

Our BST approach is to look at the data as it is reported for the SQM and to see if an efficient test for performance measurement differences is possible. This was what we did with the OSS response interval measurement that the Commission requested be tested. As detailed in our interim report of November 19, we found an efficient way to test for differences between the CLECs and BST. You may recall that the differences we found were statistically significantly in favor of the CLECs. No LCUG or LCUG-like test was possible here.

> **Conclusion: An LCUG-like test is not necessary when another efficient approach is possible, as was the case with the OSS response interval.**
>
> **To require all data systems be such that an LCUG-like test can be conducted is, therefore, unnecessarily burdensome provided an efficient alternative exists. A one-size fits all approach is unwise.**

2. How to adjust so as to compare "like-to-like." – Our approach to comparing like-to-like was to match aggregate CLEC and BST data in as many ways as the data systems would allow, depending on the measure and the nature of the service. Incidentally, we would always advocate matching on some measure of time and geography. Given the nature of the telecommunication business, wire center seems ideal as the geographic measure. How detailed the matching on time should be needs more research but certainly matching at least bi-weekly makes sense.

We did the like-to-like comparisons by calculating the mean difference between aggregate CLEC and BST service delivery at the most detailed level possible; we then weighted the mean difference d_i by the volume of CLEC activity c_i in that service delivery category and added across categories to obtain $D_c = \sum d_i c_i$. The testing of D_c was, then, done at some overall high level.

During the workshop, the suggestion was made that the difference d_i could also be weighted by the volume of BST activity b_i in that service delivery category and then added up to obtain $D_b = \sum d_i b_i$. Testing D_b would be an alternative to testing D_c.

We had not considered the alternative of D_b earlier because, while both would provide unbiased tests, tests based on D_c would be more efficient; hence, based on the Commission's criteria, were preferred. We did, however, agree to do some sensitivity analyses here. Incidentally, the limited looking done at D_b confirms our earlier views. Even so, we plan to accept the suggestion made at the workshop and add a test for D_b to the routine BST outputs to be provided to the Commission.

One concern raised when these points were made at the workshop was that there might be a way to "game" the system to provide bad service in some strategically important categories and compensate by providing better service in less important categories, so that the net result would appear to be a "wash." One answer to this is that the individual CLECs can always look at their own performance data, at whatever level of disaggregation they wish to check for a possibility such as this.

> **Conclusion: Testing like-to-likes, based on D_c (supplemented by D_b), should work well and, of the alternatives considered, appears the best for the Commission's purposes. Ways to detect gaming the system are already available to CLECs. The approach of testing at a high level (combined with drill downs when problems are found) should also be very efficient for the Commission, the CLECs, and BellSouth.**

3. Feasibility and need for deep testing. – During the workshop we commented at length on issues surrounding performing a large number of statistical tests. The LCUG proposal appears to require deep testing for each "like-to-like" category, as distinct from our approach where the *matching* of like-to-like is done at a deep level but the *testing* is at an aggregate level.

One way to implement the LCUG approach would be to use permutation tests. Such tests, though, require that the CLEC and BST performance data are statistically independent – something we did not find to be the case for Order Completion Interval. For this reason alone we have grave doubts about how the multiple testing could even be conducted. We agreed to conduct some simulation experiments to illustrate our point and these will begin in January.

Setting aside the issue of how to do deep testing, there are some related independence questions that arise when using the results of the extensive tests envisioned – perhaps thousands of tests each month for each performance measure. In our Interim Report to the Commission we had already done a fairly large simulation to illustrate the problem of combining the results of multiple tests. We see no way around this problem in the absence of new theory.

Lastly, we feel the computational burden of the deep testing to be inordinate, relative to the adjustment approach we propose and which is among the methods routinely used in observational studies of the sort being examined here. Beyond the statistical and computational issues are practical operational ones, relative to what would be done with all the multiple failures that would be found, even in a world of complete parity.

> **Conclusion: Deep testing is not appropriate when another method of like-to-like comparison is possible and its utility is doubtful in any case.**

4. Improving the BST tests to be sensitive to CLEC/ILEC variance differences. – In the testing we did for the Commission, the ILEC variance was nearly always larger than the CLEC variance, so the issue of making our test sensitive to cases when the CLEC variance was **larger** did not come up in the data we examined.

During the workshop the issues here were thoroughly discussed and we agreed to modify our test to take account of such concerns. This has now been done. Our approach has been to add another test to the one provided earlier -- constructing a variant of the BST test statistic that would be sensitive to variance differences when these might otherwise hurt the CLECs.

The LCUG measure is itself a compromise in its ability to test for differences in service between BST and the CLECs. It, after all, employs just the BST variance; hence, cases where the CLEC variance is **smaller** are not tested with the same sensitivity as in our original BST approach, **when the other LCUG assumptions hold. Two versions of the BST test should cover all concerns however.**

> **Conclusion: The BST test has been made at least as good as the LCUG in detecting differences in service delivery that arise because of differences in variability. It is already better in handling departures from independence and certainly less computationally intensive and expensive than deep testing.**

5. What significance level to use and whether to do two-sided testing. – In our Interim Report we employed two-tailed testing with a type 1 error of 5% overall. Operationally, this means that test statistics, or Z values, outside the range of plus/minus 2 were considered "statistically significant."

There are a number of issues that lead us to this formulation and which might bear reiterating. We take up the issue of one versus two-sided tests first and then the level of significance next:

> First, there is information about potential differences in service delivery when significance occurs in either direction and this information can be used by BellSouth management in meeting the needs of all its customers.
>
> Cases when BellSouth appears to be statistically significantly favoring CLEC customers over its own retail customers are not directly actionable by the Commission but may be worth noting, especially when preceded or followed by statistically or near statistically significant results in the opposite direction (as was the case with maintenance average duration in August and September).
>
> Second, treating test statistics, or Z values, outside the range of plus/minus 2 as "statistically significant" is equivalent to making two one-sided tests at 2.5% each. The latest LCUG proposal stipulates that the testing be one-sided with a Z

value of minus 1.645 (for a one-sided test at 5%), albeit earlier values have ranged as large as minus 3 (which would be a one-sided test at about 0.5%).

The problem with choosing any testing level beforehand is that it imposes a dead weight on BellSouth, requiring an expensive search for root causes each time a failure occurs. For this reason a very conservative level of significance might be chosen. In using a 5% testing regime we are, therefore, taking a middle way.

Conclusion: There is a lot of general statistical experience which supports the usual plus/minus 2 form for testing and this, combined with the issue of possibly large fixed costs to BellSouth, even when there is no disparate treatment, leads us to favor a 5% two-sided test at the start.

B. Open Still

There were seven open or action items involving statistical testing of BellSouth's Service Quality Measures in Louisiana. To address these we begin by citing the item as it appears in the Louisiana Public Service Commission's followup notes from the November 30/December 1 workshop. A brief status report is then given underneath each item.

(a) **The following additional performance measurements will be evaluated using the BST, LCUG, and FCC statistical methodologies: Ordering: Percent Flow-Through Service Requests: Provisioning: Percent Missed Installation Appointments; Maintenance and Repair: Customer Trouble Report Rate; a Billing Measure (Staff suggests the Usage Data Delivery Accuracy measurement), a Trunking Measure (Staff suggests the Comparative Trunk Group Service Summary measurement).**

The testing of the five performance measures given above will be conducted, should this prove feasible. We also plan to test one or two more measures to see what can be said about the BST approach in general. The measure "Provisioning: Percent Missed Appointments" has been done already. A key goal of this process might be identified to the main key measures that need regular testing and to use the remaining measures when a "drill down" or root cause analysis is necessary.

(b) **The statistical tests will be performed at both the LATA and MSA level.**

A comparison of MSA and LATA geographic tests will be conducted. Current plans are just to continue to look at the Order Completion Interval provisioning measure specifically but generalizations will be offered on other measures as well. We may attempt to look at Turfs too, plus urban/rural for the state as a whole.

(c) **Further analysis and research will be conducted on variations within wire centers.**

We are already well along on analyzing dependencies within wire centers. We plan to incorporate additional measures (some mentioned earlier in this note) into the basic statistical summaries. Frankly, however, this is a very hard problem because each wire center is different in the mix of work it gets and in the degree of CLEC activity and this can vary quite a bit over time too. Colin Mallows has been very helpful here.

(d) **Further analysis and research will be conducted on the weighting methodology. In particular what would happen to the results if the weights were based upon the ILEC volumes not the CLEC volumes?**

We have already recalculated our adjusted estimates using BST as well as aggregate CLEC volumes. This will be done routinely in the future as mentioned earlier.

(e) **Further analysis and research on Type I versus Type II errors.**

This item was not in our notes as a followup from the workshop, so we have yet to start it. However, there were several suggestions at the workshop (discussed in the detailed comments available separately) that we intend to explore thoroughly.

(f) **The BST statistical test will be adjusted to make it more sensitive to standard deviations.**

As discussed above, this item has been addressed completely in our view by adding an adjusted test that will focus better on the case when the aggregate CLEC variance is larger than the comparable BellSouth value.

(g) **BST to respond to CLECs concern that aggregation (rolling up of data) could allow BST to "game" the system. How could this possibility be detected under the methodology proposed by BST?**

In our discussion of issue 2 above we have commented on this point and indicated how it could be addressed. We feel any attempts at gaming would be readily detectable by the CLECs.

C. Statistical Work to Date

The statistical approach taken by Ernst and Young began by looking at the alternative testing ideas mentioned by the Louisiana Public Service Commission: (1) the pooled variance approach suggested as something to be considered by the FCC, (2) the LCUG approach (as it has evolved), and (3) the statistical process control approach (originally advocated by BellSouth). We found aspects of both the pooled variance and LCUG

approaches helpful as starting points for our own work. The statistical process control approach did not seem workable and was not pursued.

Having the ideas of others in mind, we then looked at the Louisiana Service Quality Measures for OSS Response Interval, Order Completion Interval and Maintenance Average Duration. We found the Pooled Variance and LCUG approaches unworkable for the OSS Response Interval and had to employ statistical time series methods. For Maintenance Average Duration the LCUG, Pooled Variance and our BST approach all gave about the same results, once adjusted so that like-to-like comparisons could be made. For the Order Completion Interval variable, however, only the BST approach seemed to work efficiently and in a way that respected the underlying complex nature of the operating data being used.

There is clearly more to do and more to learn, both from the others who have been looking at this problem and from the data themselves. We hope by February to speak more conclusively about our findings.

Finally, this might be a place to add in a reminder of something that we said over and over at the workshop. **It is very difficult to use observational studies to show causality or in this case disparate treatment.** Therefore, even if we find a statistically significant difference between BellSouth and the CLECs on a measure, it is not necessarily proof of disparate treatment. This is why a "drill down" is needed to investigate the root cause of the difference. The difference may be due to factors that affect the interpretation of the performance measure; they may be a statistical fluke; or the differences may, indeed, be due to disparate treatment. But this cannot be determined without a drill down.

Response to Dr. Colin Mallows' Comments Originally Read at the Louisiana Public Service Commission Workshop on November 30, 1998.

Dr. Mallows' made a series of detailed comments at the November Louisiana Public Service Commission (LPSC) Workshop. These have been reproduced below, followed by our response. Before going into the specifics, some general observations may be worth making. The most important of these is that we are very appreciative of Dr. Mallows' ideas. They have led both to improvements in our thinking, and, we hope, to its exposition.

We do not necessarily agree with all of his comments, but we believe that our differences can be summed up by a statement Dr. Mallows made in the American Statistical Association's 1997 Fisher Memorial Lecture.

> "In a complex problem, it is possible for ethical analysts to take opposing positions. But this style of thinking is what statisticians should be trained to do."

Dr. Mallows' views (in *italics*) appear as they do in a document forwarded to us by Jay Bradbury of AT&T. We have, however, broken down his statements numbered 1 through 8, into substatements in order to clarify exactly what we are responding to.

Statement No. 1

1.1 *The BST team has done a good job of descriptive data analysis. They have made many sound comments on the importance of data-verification, the need to trim outliers, the importance of disaggregation, and the need to identify confounding variables and to adjust for their effects.*

We thank Dr. Mallows for his compliments. The Ernst and Young approach was to recognize that the data are an example of an observational study and the resulting methodology is based on the associated literature. An observational study uses data that come from a process where there was neither a design nor a random assignment of treatments.

1.2 *They have made a useful contribution by showing how the BST data can be adjusted to make it directly comparable to the CLEC data*

It is imperative that adjustments are made in order to compare "likes-to-likes." Bias is the primary concern in observational studies. In order to compare BST and CLEC data, it is necessary to consider any variables that are known or suspected to have an important relationship with the performance measure. In the design of such a study, variables accounting for time and location are generally considered. Therefore we recommend using a location category (wire center) and a time variable in the comparison for any performance measure.

The adjustment we employ is commonly used in observational studies when there is a considerable amount of data involved. To our knowledge it was introduced in Cochran (1968) "Removing Bias in Observational Studies," *Biometrics*. Thus, we should refer to it as the Cochran adjustment.

1.3 *However I think their conclusions are not supported by the evidence that they have presented. They have not shown that the FCC/LCUG approach is invalid.*

Our conclusions are about the data that we have analyzed, and not necessarily about the general validity of the LCUG/Pooled variance[1] approach. We have concerns when the data exhibit a dependence structure. We have never seen any discussion of this notion in LCUG documents.

We assumed that the LCUG approach was targeted at the data presented in the Service Quality Measurements (SQM) reports, and we find both the LCUG and Pooled tests inadequate for use on these data. Straightforward use of these tests can result in biased estimates of the difference in means, incorrect variances, and hence, inappropriate test statistics.

It should be noted that our methodology, and the LCUG/Pooled approaches are all basically equivalent when there is no dependence structure in the data. This point is discussed in **Technical Appendix A.1**.

1.4 *At one point they have made an adjustment that favors BST, is in the wrong direction, and may be quite large.*

We believe this statement refers to our choice of variance estimator that Dr. Mallows discusses in his fifth point. We chose the method that was recommended as conservative in Wolter (1985) *Introduction to Variance Estimation*, Springer-Verlag. However, we now realize that this definition of conservative does not coincide with what LCUG feels is conservative. Namely, one should always err on the side of the CLECs.

As is shown below in discussing point No. 5 (specifically 5.4), there is very little difference in the two variances. However, we understand LCUG's concerns, and will use the smaller of the two variances in future computations.

Statement No. 2

2.1 *On page 41 the BST analysts remark that for the Average OSS Response Interval they only had daily summary averages to work with, and that this sever[e]ly limited*

[1] The pooled variance Z-test was mentioned in footnote 1 in the FCC's **Notice of Proposed Rulemaking (Appendix B)** This has become known as the FCC approach, however, the FCC does not approve or disapprove of its use. We will therefore more appropriately now refer to it as just the "pooled" approach.

their approach to analyzing statistical significance. Clearly if BST does not make suitable data available, any statistical approach will be handicapped.

The word "severely" applies to our ability to use the LCUG/Pooled approaches on the data. Since we could use a time series approach to analyze and test the data, there is no need to have the data in another form. Just because one cannot use a particular tool on data does not mean that there is something wrong with the way the data are structured.

2.2 *The BST analysts seem to have had access to the numbers of orders, since they used these to adjust the BST data; but they have not presented these numbers in this report.*

There are disclosure issues involved when releasing data, and we must be sensitive to this issue. For this reason, the specific BST and aggregate CLEC counts were not provided. We did omit the OSS Response Interval SQM in Appendix G. This was not intended, and we will add it when the report is updated.

Statement No. 3

3.1 *The BST analysts claim in their summary Table 1 that their recommended methods will have essentially the same power as the FCC and LCUG tests to detect differences, should they exist.*

The term "power" should not have been used in this context. The point we were trying to make referred to efficiency of the test (as required by the LPSC order we were addressing). The word "efficiency" we are interpreting as confidence interval length.

3.2 *They give no evidence of this, and in fact in many of their summary tables the BST statistic is less extreme than are the FCC and LCUG statistics, which suggests that it has less power.*

We agree that we have not given specific evidence. Any discussion of a comparison of power needs to start with defining a specific alternative hypothesis that would be considered a significant degradation in services for the CLECs. One example given by LCUG at the workshop involves studying a test statistics behavior when a difference in the means is equal to 10 percent of the BST standard error. We will use this example in one of the follow-ups requested by the LPSC from the workshop.

We point out, however, that the LCUG/Pooled estimator applied to the original SQM data is not a fair measure because the estimate of the mean difference (the numerator in the LCUG/Pooled test statistic) is biased. This can be corrected by

using the adjusted difference in the numerator, as we have done. However, when there is dependence between observations, the estimate of the variance (in the denominator) is also incorrect. Therefore, one cannot infer from looking at the test statistics alone anything as regards differences in power.

3.3 *On page B-13 they claim "there is a minimal loss of power using the replicate method compared to the FCC or LCUG method (2.04 vs. 2.00 for the 5% two-sided significance level)". But here they are only comparing the critical values of the tests, and this says nothing about the powers of the tests.*

We agree that it is incorrect to use the term power in this context. Due to the problems with the LCUG and Pooled tests when applied to dependent data, we chose to compare critical values of the test. It is appropriate to say, see our answer in 3.1 above, that there is very little loss of "efficiency."

If data are independent, and the replicate variance estimate is adjusted so that it is sensitive to differences in variance, then it can be shown that the results of the LCUG and BST tests are similar. In this situation then there will be little loss of power using the BST test. (See **Technical Appendix A.1-2**.)

Statement No. 4

4.1 *The analysts assert that the LCUG and FCC procedures require strong assumptions that are not warranted in the data they have examined.*

As we have stated previously, we assumed that the LCUG/Pooled methodology was to be applied to the data at the levels of disaggregation reported in the SQM. In order for these methods to be applied, one must assume that the observations are independent and identically distributed.

The exploratory analysis that we performed on the data sets indicated that this was too strong an assumption to make. Thus, we did not feel that these procedures should be used unchanged.

It should be noted, however, that our findings do not imply that we must test within each possible adjustment class. This is neither practical nor necessary. The methodology proposed by Ernst and Young results in an estimate of the difference aggregated over all groups. This would be unbiased if all the variables that can affect performance have been accounted for in the classes. At the very least, it would result in tests at the present level of aggregation that have less bias then the proposed LCUG test.

4.2 *These procedures have three components. First, a particular statistic is chosen. This is some function of the BST and CLEC data, designed to be sensitive to the kinds of violation of parity that are deemed to be important. The FCC proposed a standard form of the two-sample t statistic; LCUG proposed a modification of this. The BST analysts rely on the difference between the CLEC mean and an adjusted BST mean.*

We do not agree. The replicate methodology employed is also a modification of the standard form of the two-sample "t" statistic. As Dr. Mallows points out in remark No. 1.2, the Cochran adjustment used on the data is necessary in order to make the BST data directly comparable to the CLEC data.

4.3 *It is the judgement of LCUG that a simple comparison of means will not be responsive to all of the possible ways parity might be violated.*

We agree with this point. The LCUG test statistic is a variation on the standard pooled variance test of the difference between two sample means. It has been modified to be sensitive to certain differences in variances as well. While the original method we proposed lacks this sensitivity, a simple adjustment can be done to our test to give it a similar property. We discuss this in **Technical Appendix A.2**.

We note, though, that this test methodology is not the same as testing whether the distribution of the aggregate CLEC values is the same as the distribution for the BST values for a particular performance measure. Testing for equality of distributions is a more complicated problem.

4.4 *It is easy to provide scenarios in which parity is being violated but a comparison of means shows no effect. BST has not presented evidence that the only differences that occur are shifts in means, with variances staying the same.*

We do not argue the point that scenarios can be constructed in which parity is being violated but a comparison of means shows no effect. However, in the data we examined, more often than not, the CLEC variance was smaller than the BST variance. This being the case, the variance sensitivity adjustment makes the test less likely to detect instances where BST is favoring itself in terms of a difference between the means.

4.5 *The choice of statistic does not depend on any assumptions; though of course the efficacy of the resulting procedures will depend on how the data actually behave.*

As we have stated, the data exhibit a wire center dependency which precludes the use of the LCUG or Pooled procedure at the levels of disaggregation reported in the SQM.

It is our understanding that LCUG wants to handle this through deeper disaggregation, and testing at this very deep level. We do not believe that this removes the dependency problem since data from the same wire center is still dependent, despite being disaggregated.

Even if the dependency problem is ignored, the deep disaggregation will most likely call for testing procedures that are suitable when sample sizes are small. LCUG suggests using a permutation test for this situation (letting the computer draw many pseudo-random samples).

This is not practical and it is not necessary. We have presented a way to avoid costly testing at very deep levels of disaggregation. Dr. Mallows agrees that BST data can be adjusted to make it directly comparable to the CLEC data, so we can use it at a high level of aggregation.

In Dr. John Jackson's recent submission to the LPSC, "Using Permutation Tests to Evaluate the Significance of CLEC vs. ILEC Service Quality Differentials," he notes that permutation tests he ran were taking 15 to 20 minutes to complete. Even with an improved algorithm and a faster computer, these tests might take five seconds on average to complete.

In the case of just one performance measure, "Order Completion Interval," this could necessitate possibly 16,000 tests. If this had to be done for all performance measures, at very deep levels of disaggregation, the number of tests could easily reach 100,000. Thus, it could take 500,000 seconds, or approximately six straight days for the computer to just perform the tests on the Louisiana data. If this had to be done in all nine states that BellSouth operates in, it would take nearly two computer months to process the test results for just one calendar month of data.

4.6 *The second component of the FCC and LCUG procedures concerns the choice between a one-sided and two-sided test, and the size of the test (the type 1 error). Since the objective of the analysis is to check whether the CLECs are being given service that is at least equal in quality to what BST provides itself, it seems to LCUG that one-sided tests are appropriate.*

We disagree. In instances where it appears that BST is favoring itself, action needs to be taken to correct the problem. This does not mean, however, that there is no information of value when it is learned that BST may be favoring the CLECs.

4.7 *I do not dispute that both BST and the CLECs may be very interested to find that in some cases the CLEC is getting better service that BST, but for the purpose of checking compliance this is irrelevant.*

Again, we disagree. When looking at the results of tests over time, or even at the results of tests at different levels of disaggregation, it is important to know if there are significant results in both direction. This can provide an indication of whether significant results are random occurrences, or a systematic problem. It also provides information on the stability of the process.

4.8 *As for the choice of type 1 error, in the BST analyses the conventional level of 5% two-sided, equivalent to 2 1/2% one-sided, is used. LCUG has argued that the (one-sided) type 1 error should be rather larger than this, since while this small value does protect BST from being falsely accused when it is in compliance, it necessarily implies a large probability that a truly important violation, if it occurs, will fail to be detected.*

LCUG has , in fact, offered different one-sided levels of significance at different times as their filing in Louisiana makes clear. It is true that the larger the (one-sided) Type I level of significance is set, *ceteris paribus*, the smaller will be the Type II error. Choosing the right balance here is a hard problem. Even so, it is not necessarily true that there exists "a **large** probability that a **truly important** violation will fail to be detected." (emphasis added) As noted elsewhere (see No. 3.2 above), we will be looking at this issue directly for the Commission.

This might be a place to add in a reminder of something that we said over and over at the workshop. **It is very difficult to use observational studies to show causality or in this case disparate treatment.** Therefore, even if we find a difference between BST and the CLECs on a measure, it is not necessarily proof of disparate treatment. This is why a "drill down" is needed to investigate the cause of the differences. These may be differences due to factors that affect the performance measures that were not included in the Cochran adjusted estimate, or the differences may be due to disparate treatment. But this cannot be determined without a drill down.

4.9 *LCUG argues that fairness requires that the type 1 error be set larger than the conventional 2 1/2%. Again, this argument does not involve any assumptions regarding how the data actually behave.*

We agree that the issue is one of defining "fairness." We also agree that the setting of a significance level does not involve assumptions regarding the behavior of the data.

This issue of fairness, however, is not necessarily easy to resolve. The U.S. Supreme Court in *Castenada v. Partida*, 430 U.S. 482, 97 S.Ct. 1272 (1977) and *Hazelwood School District v. U.S.*, 433 U.S. 299, 97 S.Ct. 2736 (1977) adopted the rule that disparities should exceed 2 to 3 standard deviations in disparate impact cases. We have adopted "2" here -- the most common standard in general use.

4.10 *The final component of the FCC and LCUG approach concerns how a chosen level of type 1 error is to be achieved, by setting the critical value for the test. It is here that the form of the data does make a difference.*

We agree. In fact, as we stated, any testing should include acknowledgement of dependencies, if they exist across observations.

4.11 *To find the appropriate critical value, we must be able to derive the null-hypothesis distribution of the chosen test statistic - that is, the probability distribution of the values the statistic would take if the CLEC observations were in fact drawn from the same population as the BST ones. The BST analysts point out, correctly, that this distribution depends on the shape of the BST population; if this is Normal or close to Normal, then the textbook derivation applies and we can look up the critical values in published tables.*

We agree, except that an examination of the data shows that the BST data is far from Normal. However, by carefully assigning wire centers to replicates, Normal distribution theory can still be used on a test statistic whose variance estimate is based on the replicates.

4.12 *But if we do not have a Normal population, the textbook derivation does not apply. However, in the present case we do not need to make assumptions - we have data!*

The comment about not needing assumptions confuses us. It is true, of course, that when there is a large amount of data weaker assumptions may be possible. Our approach was a case of this. In particular, we checked the data, noted a wire center dependency, and used this knowledge to construct a test based on replication – a test with a minimal number of assumptions.

4.13 *For each data series, the BST analysts had access to large samples of BST data, and it would be completely straightforward to use the computer to draw many pseudo-random CLEC samples from these and so to derive the required distribution of the FCC or LCUG statistic.*

We agree that computer resampling techniques can be employed on this problem. That is, in fact our approach. Such techniques are, however, not necessarily "completely straightforward," especially if there are dependencies inherent in the data.

The replication method we have proposed does deal well with the dependencies we found. It relies on the computer to recalculate the same statistic for each replicate. Additional resampling and then averaging the results is promising. This is certainly in the spirit of Dr. Mallows' suggestion, and we intend to try more.

4.14 *Another requirement of the FCC and LCUG approaches is that the samples be independent. In Figure 10 and many subsequent Figures the BST analysts present evidence that there are differences among the wire-centers; for some wire centers, the provisioning interval tends to be large for both BST and the CLECs; for other wire centers, it is smaller.*

This is very important to recognize. We do not believe that deeper levels of disaggregation will eliminate this problem.

4.15 *This effect can easily be allowed for by relying on within-wire-center comparisons; this is what the BST analysts do, since they work with differences between BST and CLEC means within each wire center. The FCC and LCUG approaches can also handle this difficulty; we simply replace the overall variances by pooled within-wire-center variances. This is a completely standard form of adjustment.*

This may be true, but we do not believe that the within wire center variances are easy to compute. Remember, the BST and CLEC samples within a wire center are correlated. Thus, any calculation of a "pooled within-wire center" variance must include calculation of covariance terms. These may be very hard to analytically determine.

The alternative we have presented is a computer intensive technique that captures both within-wire center and between-wire center variation. Therefore, the testing can be done at a higher level of aggregation than the wire center.

4.16 *The effect of confounding variables, such as those the BST analysts discuss on pages B-5 and B-6, can also be allowed for in the FCC/LCUG approach. The BST team adjusts the data by using the weighted average D-hat in equation (3) (page B-7). This quantity could be used as the numerator of an FCC/LCUG statistic by matching it with a variance estimate computed from within-class variances.*

This is not the original form of the LCUG/Pooled approach that we had read about. We chose to use an approach that we have some expertise in applying.

4.17 *I therefore reject the conclusion of the BST analysts that the FCC and LCUG procedures have to rely on unwarranted assumptions. Once we have data, we do not need assumptions.*

We used an approach that we felt fit with the data that we had. By Dr. Mallows own admission above, the LCUG measure needs to be modified to handle the dependencies in the data. Our approach does this.

Statement No. 5

5.1 *The BST analysts use a Replicate Variance Estimation method to provide a scale on which to compare differences between BST and CLEC means. For each wire center, they compute the difference between the CLEC mean and the adjusted BST mean; they combine these into an overall estimate D-hat (equation (3), page B-7) using weights that correspond to the numbers of CLEC observations in each [difference].*

Actually, we compute the difference between means for each type of order, at each time, within each wire center. This is Cochran's method for dealing with observational data, and it provides an unbiased estimate of the difference between the means of BST and the aggregate CLECs.

5.2 *They then use the individual differences in equation (5) (page B-8) to get an estimate v_1 of the variance of the equally-weighted average of the differences, which they call d-double-bar.*

This is a common device used in replication. If in each replicate we have the same number of CLEC records, then the estimator is linear and $\hat{\theta} = \bar{\bar{d}}$. The assignment of wire centers to replicates is random, so if the sample size for the CLEC orders is large, we would expect that the estimator would be reasonably close to linear. If it is not close to linear, we can employ additional resampling techniques to correct this.

5.3 *However, since they want to use D-hat rather than d-double-bar as their overall estimate, they propose to replace v_1 by the estimate v_2 in equation (6).*

We chose the estimator recommended by Wolter[2], v_2. This was done with no further discussion because in the data we analyzed, there was no noticeable difference in the two estimates.

5.4 *This adjustment is in the wrong direction, and may be large. The effect is to favor BST by deflating the BST statistic.*

The following table gives the ratios of the standard error using v_2 to the standard error using v_1, for the estimated difference over all cases.

[2] Wolter, K. (1985) *Introduction to Variance Estimation*, Springer-Verlag, New York.

Measure - Month	$\sqrt{v_2 / v_1}$
OCI - August	1.0016
OCI - Sept	1.0057
OCI - October	1.0003
MAD - Aug	1.0052
MAD - Sept	1.0004

This shows that, for the data analyzed, that the "adjustment in the wrong direction" is not large.

5.5 *The estimate D-hat is more precise than is d-double-bar, and has a smaller variance; but the estimate v_2 is larger than v_1.*

We will make the suggested change by using $\bar{B} / \sqrt{v_1}$ as the basis for the test statistic rather than $\bar{B} / \sqrt{v_2}$.

5.6 *I cannot judge how big the effect is, this depends on how variable the CLEC sample sizes are, but I would not be surprised to find that the BST statistic has been deflated by a factor of 2.*

As we have shown in No. 5.4 above (and **Technical Appendix A.3**), the effect is not large. The reduction in the test statistic comes from taking wire center dependency into account when calculating the standard error of the difference of sample means.

Statement No. 6

6.1 *On page 15 the BST analysts say that "the BST analysis is designed to account for ... different standard deviations between BellSouth data and the CLECs". The BST analysis does not *account* for differing standard deviations.*

This is correct. In general, the BST method, as originally proposed, is not sensitive to the situation where the CLEC standard deviation is larger than the BST standard deviation; at the workshop we agreed to modify it. The details of this modification are presented in **Technical Appendix A.2**. Our new results provide a test that is equivalent to the LCUG test when the data are independent.

Incidentally, for the data that were analyzed, this adjustment would have made most of the tests **less significant** since the CLEC variance was generally smaller than the BST variance.

6.2 *Suppose for example that within each wire center, the BST and CLEC populations both have the same mean, but that the CLEC observations are more dispersed than the BST ones. See Illustration B, on page 7. Then parity of service is being violated within each wire center.*

While this hypothetical case is possible, the data we have looked at suggest that the opposite is true: the BST data are more dispersed than the CLEC data.

6.3 *The effect would be very hard to see in Figure 10; the CLEC means would be a little more dispersed than the BST means.*

This is true. We need to provide more diagnostics in order to check for this situation.

6.4 *The BST analysis, which uses only the differences between the BST and CLEC means, is completely insensitive to such differences. It would completely fail to detect such a violation of parity.*

We do not believe that such violations are present in the data we have analyzed. The modification that we propose for the test (see **Technical Appendix A.2**) will make it more sensitive to certain differences in BST and CLEC variances. Since the replicate method captures total variation in the data, a test of the hypothetical situation described would detect the significant difference in BST/CLEC performance.

6.5 *The BST analysts have not given us any information on the relative scales of the BST and CLEC variation within wire centers.*

We agree. We need to find ways to easily convey this type of information while respecting security concerns. The interpretation of such data, it might be noted, may be particularly challenging to interpret given that the wire centers are not identically distributed.

Statement No. 7

7.1 *On page B-3 the BST analysts assert that the "correct" test when the BST and CLEC variances are different is based on the statistic t' that they present at the top of the second column. The test based on t' is a test of the hypothesis that the means are equal, allowing the variances to be different. But this is not the appropriate null hypothesis. The t' test is not a test of the hypothesis that the BST and CLEC populations are the same.*

We agree on this point. But also add that the LCUG test is also not a test of the hypothesis that the BST and CLEC distributions are the same. The LCUG test is simply a test of the differences in means that has been modified to be sensitive to

certain situations where variances differ. We are modifying the BST test to have similar sensitivity (see **Technical Appendix A.2**)..

Statement No. 8

8.1 *The simulation results that are reported on pages J-3-6 assume very large serial correlations - much larger than those found in Appendix G for the Average OSS differences.*

The correlations in the Interim Report's Appendix J are modeling dependencies between tests, not the serial or auto- correlation of a measure over time (which is what is looked at in Appendix G for the Average OSS Response Interval). As stated in Appendix J, the correlation structure was chosen because it has a uniform mix of correlation levels between parity measures.

8.2 *The Bonferroni method described on page J-6 assumes the worst possible correlation structure - in fact it allows for the possibility that the individual tests are perfectly correlated, they all pass or fail together.*

We agree that the Bonferroni method is conservative. That is why we do not recommend using it for more than 10 tests. It should be noted, however, that the procedure suggested by AT&T for 5 tests is approximately the same as the Bonferroni method.

8.2 *Empirical study is needed to check the degree to which the various tests are actually correlated.*

We agree. We need to study the correlation between measures. At this point in time we have only examined three measures from different SQM categories. By the time of the February Workshop we will have analyzed at least six (6) performance measures. Providing correlations across measures is planned.

8.3 *Regarding page J-3, the fact that the number of service requests varies comparatively smoothly for both BST and the CLECs does not imply that the FCC/LCUG statistics are correlated. We would need to look at the series of differences between BST and CLECs; this could easily resemble Figure 1 on page G-5, showing very little serial correlation.*

We agree that more study is needed to determine the autocorrelation of an individual test statistic from month to month. The last paragraph in Appendix J states this. While such an examination could easily show very little autocorrelation, it could also easily show that there is significant autocorrelation over time.

8.4 *The simulations on pages J-7-9 show that even for the extremely skew population in Figure 4 (I presume "Figure 1" on page J-7 is a misprint), the distribution of the LCUG statistic is close to standard normal except in the extreme tails.*

This was the point of the simulation, and it is one of the reasons we would not recommend using the Bonferroni method on more than 10 tests.

Technical Appendix A

At the Statistical Workshop, several technical issues were raised regarding the BST statistical methodology. In this appendix, we supply details on these issues. As part of this discussion, we made a claim about the expected value of the replicate variance estimator under the assumptions necessary for the LCUG test to be appropriate. The details, or proof, of this assertion are shown in Section 1.

We realize, from the discussion at the workshop, that it is important to make the test sensitive to the case where the CLEC variance is larger than the ILEC variance. Section 2 describes how the BST test, as used for the performance measures (Maintenance Average Duration and Order Completion Interval), will be modified so that it is sensitive to this possibility, in the same way that the LCUG test modifies the pooled variance test.

Section 3 responds to criticisms relating to the variance estimate used in the BST test statistic, namely the use of v_1 versus v_2, in the notation of Wolter.[1] We have no problem agreeing to use v_1 for the calculation of the tests, but we also give examples to show why this choice would not make a material difference in the tests based on the data we analyzed.

1. Variance of $\bar{\Theta}$ Under Strong Assumptions

Under the strong assumptions of independence and identical distributions, we show below that the variance of $\bar{\Theta}$ is the usual variance of the difference in means. Suppose that the observations are independent and identically distributed within each treatment group (BST vs CLEC) and that the CLEC observations are independent of the ILEC observations. It is also assumed that the observations are identically distributed in their distribution across the adjustment cells; that is, the proportion of BST records in class j is the same as the proportion of CLEC records in class j.

In the usual statistical notation these assumptions can be expressed as

x_{1i} iid as (μ_1, σ_1^2)
x_{2k} iid as (μ_2, σ_2^2)
x_{1l} independent of x_{2k} for all i and k.
$n_{1j}/n_1 = n_{2j}/n_2 = p_j$ for all adjustment classes j.

Then the estimator $\bar{\Theta}$ can be written as

$$\bar{\Theta} = \sum_j w_j(\bar{x}_{1j} - \bar{x}_{2j}) \text{ where } \sum_j w_j = 1.$$

[1] Wolter K., (1985) *Introduction to Variance Estimation*, Springer-Verlag, New York.

Two possible calculations for the weights have been discussed:

1. $w_j = n_{2j} / n_2$, and
2. $w_j = n_{1j} / n_1$

Assuming identically distributions across the adjustment classes, we have that $w_j = p_j$ in each case.

Because of the independence assumptions, we then can show that

$$\mathrm{Var}(\bar{B}) = \sum_j w_j^2 \left(\frac{\sigma_1^2}{n_{1j}} + \frac{\sigma_2^2}{n_{2j}}\right)$$

Finally, because $w_j = p_j = n_{1j} / n_1 = n_{2j} / n_2$, we have

$$w_j / n_{1j} = 1/n_1, \text{ and}$$

$$w_j / n_{2j} = 1/n_2$$

Therefore,

$$\mathrm{Var}(\bar{B}) = \sum_j w_j \left(\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}\right) = \frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}$$

2. Making the BST Test Sensitive to Differences in Variance

In the data analyzed, we did not see many examples where the variance of the CLEC observations (σ_2^2) was larger than the variance of the BST observations (σ_1^2). The test recommended by E&Y, using the Cochran adjusted estimate with the replicate estimate of variance, does not adjust the test for the case when $\sigma_2^2 > \sigma_1^2$ (as would be the case for the LCUG test). The test statistic proposed by E&Y uses in the denominator a (nearly) unbiased estimate of the variance of the estimated difference in the numerator. If the assumptions necessary for the LCUG test hold, then the expected value of the replicate variance estimator is $\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}$ rather than the LCUG desired $\frac{\sigma_1^2}{n_1} + \frac{\sigma_1^2}{n_2}$ (See the next section for the proof).

To fix this, the replicate estimate of variance can be adjusted so that it is sensitive to variance inequalities by multiplying it by an estimate of the ratio:

$$\frac{\sigma_1^2\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}.$$

The estimates of variance we propose to use in this ratio are the variances calculated from the adjusted data, the weighted variance for the adjusted ILEC data and the variance estimate for the CLEC data (which is not weighted in our original weighting scheme.)

Equivalently, we multiply the test statistic based on the Cochran adjustment and the replicate variance estimate (using v_1) by

$$R = \frac{\sqrt{\sigma_1^2/n_1 + \sigma_2^2/n_2}}{\sigma_1\sqrt{1/n_1 + 1/n_2}}$$

There may be some bias associated with this ratio estimate, but for reasonable sample sizes we believe the bias will be small. We plan to check this assertion by calculating both the simple ratio above and a Jackknife estimate of R (since Jackknifing reduces the bias in the estimate).

Incidentally, we have made these calculations for two data sets and it appears that the Jackknife adjustment may not be necessary. The following examples are for the month of August, 1998, and in each case the original test statistic is calculated as $t = \frac{\bar{D}}{\sqrt{v_1}}$ for testing the difference in the overall means.

Performance Measure	Original BST Test Statistic	Ratio Adjustment, R	Modified Test Statistic	Jackknife Ratio Adjustment	Jackknifed Modified Test
Order Completion Interval	-2.575	0.776	-1.998	0.769	-1.980
Maintenance Average Duration	-1.941	1.015	-1.970	1.016	-1.972

For the Order Completion Interval measure, the test statistic changes from -2.6 to -2.0, approximately, because the CLEC standard deviation is smaller than the BST standard deviation. For the Maintenance Average Duration measure, the standard deviation for the CLEC's is slightly larger than the BST, so the test statistic was modified from -1.9 to -2.0.

3. Variance Estimate to Use in the Denominator.

The original denominator in our BST test statistic is an estimate of the standard error of the estimate of the difference, which is the numerator of the test statistic. The Cochran

adjusted numerator is a weighted difference in means. The usual estimate of variance cannot be used, due to the possible dependence between observations in certain classes. Therefore, a more general estimate of variance was chosen, namely the use of random groups, or replicates. This gives a nearly unbiased estimate of the standard error of the estimate of the difference in means.[2]

The question of using the estimate v_1 vs. v_2 arose. (Appendix B, Interim Statistical Analysis for BellSouth, November 19,1998.) We chose the estimator recommended by Wolter[3], v_2. This was done with no further discussion because in the data we analyzed, there was no noticeable difference in the two estimates. The following table gives the ratios of the standard error using v_2 to the standard error using v_1, for the estimated difference over all cases.

Measure - Month	$\sqrt{v_2 / v_1}$
OCI - August	1.0016
OCI - Sept	1.0057
OCI - October	1.0003
MAD -Aug	1.0052
MAD -Sept	1.0004

As might be expected, the "standard error" estimate using v_2 is slightly larger than the standard error using v_1, but in the data analyzed, the differences are not important. However, we have no problems with using v_1 in our replicate estimation, rather than v_2, and we will do this in the next comparisons.

It was also noted that $\vec{B}$ should have smaller variance than $\bar{\bar{d}}$. If in each replicate we have the same number of CLEC records, then the estimator is linear and $\vec{B} = \bar{\bar{d}}$ (hence $v(\vec{B}) = v(\bar{\bar{d}})$). In the general case, a Taylor series argument can be made that $\vec{B} \approx \bar{\bar{d}}$, or better, an average of several $\bar{\bar{d}}$ s, if the replicates are independently and repeatedly selected. Now since the assignment of wire centers to replicates is random, and the sample is large, we would expect that the estimator would be reasonably close to linear. A check on this will be introduced in our future work.

4. Conclusion

The discussions at the workshop were very helpful in refining and improving the test procedures being developed at Ernst and Young. As described in this appendix, we will adjust the general test statistic in two ways. First we will use the estimate v_1 as the variance estimate in the denominator of the test statistic. Second, we will modify the test statistic so that it is more sensitive to differences in the variances between the CLEC and

[2] Ibid.
[3] Ibid.

the ILEC observations. This modification parallels the LCUG modification to the pooled variance estimate. When the CLEC variance is larger than the ILEC variance, the modified test statistic will be further from zero (more significant) than the original BST test statistic. Of course, as with the LCUG test, when the CLEC variance is smaller than the ILEC variance, the modified test statistic will be closer to zero (less significant) than the original BST test statistic.

These modifications to the BST test procedure will improve it's sensitivity to differences between the CLEC and the ILEC observations. It is important to remember, however, that the statistical testing only indicates areas where there appear to be differences that are worth investigating. These statistical tests will not prove or show the cause of differences; by themselves, the tests do not prove that someone is "at fault." The statistical tests indicate when and where there may be a need for further analysis and more detailed investigation, what has been referred to as a "drill down" or a "root cause analysis."

Sprint

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December 21, 1998

COPY

VIA FEDERAL EXPRESS
Mr. Lawrence C. St. Blanc
Secretary
Louisiana Public Service Commission
16th Floor, One American Place
Baton Rouge, Louisiana 70821-9154

In Re: Docket No. U-22252, Subdocket C

Dear Mr. St. Blanc:

Enclosed please find for filing the original and six (6) copies of the foregoing Comments of Sprint Communications Company L.P. Regarding Retail Analogs and Benchmarks in the above referenced matter. An extra copy is also included which I would ask that you please date stamp and return for my file in the enclosed self addressed reply envelope.

Thank you for your assistance. Please call me at 404-649-6221 if you should have any questions regarding this matter.

Sincerely,

William R. Atkinson

William R. Atkinson

WRA/de
Enclosures
cc: Parties of Record
Mr. John Dunlap

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BEFORE THE

LOUISIANA PUBLIC SERVICE COMMISSION

Louisiana Public Service Commission, ex parte.

In Re: BellSouth Telecommunications, Inc., Service Quality Performance Measurements

Docket No. U-22252, Subdocket C

COMMENTS OF SPRINT COMMUNICATIONS COMPANY L.P.
REGARDING RETAIL ANALOGS AND BENCHMARKS

In accordance with the revised procedural schedule noted in the Commission's Order Granting Sprint Communications Company L.P.'s ("Sprint") Motion for Extension of Time issued on December 15, 1998, in the above-styled matter, Sprint now presents its Comments on retail analogs and benchmarks. As stated by Sprint's representatives during the previous workshops held at the Commission on November 30 – December 1, 1998, in this matter, the following Comments will reflect Sprint's somewhat unique perspective as both an incumbent local exchange carrier ("ILEC") and a competitive local exchange carrier ("CLEC").

I. INTRODUCTION

As stated in its previous Comments in these proceedings, Sprint currently provides local telephone service to approximately 7.5 million end users in 18 states through its Local Telephone Division ("LTD"). In addition, Sprint has obtained a limited number of local exchange customers through its CLEC operations. Performance measurements are important to Sprint LTD because Sprint needs to understand how well it is meeting customer needs and where additional focus is required to ensure continued quality performance. Performance measurements of Sprint's retail performance assist LTD in

identifying and curing operations problems. Because LTD operates in 18 states, it requires a cost-effective strategy to implement a single set of performance measurements that are defined on a national, standardized basis. It makes economic sense to implement a standard set of measures to reduce the cost of measurement and reports and to standardize corrective methods and procedures.

Sprint has directed the senior LTD management responsible for CLEC service performance to support the evaluation and development of operational performance measurement processes and to implement the system functionality required to ensure the timely and accurate reporting of LTD's performance in providing services for resale, UNEs and interconnection to CLECs as generally contained in the LCUG SQMs. A Sprint interdepartmental team has been formed to coordinate the activities related to interpreting and implementing the LCUG SQMs across the LTD operational groups. The following Comments in particular include the recently expressed positions of Sprint - Nevada in the ongoing performance measurements related proceedings before the Public Utilities Commission of Nevada.

II. RETAIL ANALOGS AND BENCHMARKS

Both Sprint ILEC and Sprint CLEC believe that, to the extent possible, determination of parity and nondiscrimination should be based upon a statistical comparison of the actual level of performance provided by BellSouth to the CLEC and a BellSouth retail analog. Sprint defines a retail analog to be the actual performance levels the ILEC provides to itself or to its affiliates for the same or similar service. In Attachment A to these Comments, Sprint has provided a measure-by-measure analysis of the available retail analogs as identified by Sprint – Nevada, and has stated those areas

where ILEC-specific benchmarks should be established based upon a benchmark study as defined below.

Attachment B to these Comments is a draft joint CLEC position on retail analogs and benchmarks prepared in connection with the California performance measurements proceedings. The CLECs who may advocate the positions stated in Attachment B before the California Commission include AT&T Communications of California, Inc., MCI Communications Corporation, ICG Telecom Group, and Cox California Telecom, LLC. Sprint is currently reviewing the positions stated in Attachments A and B in order to determine if Sprint can support the California joint CLEC position on retail analogs and benchmarks. Sprint will provide an updated version of its specific positions, if necessary, in the subsequent Comments to be filed in connection with this issue.

If, and only if, an ILEC is not able to provide an analog to its wholesale performance for a particular reporting dimension, then a benchmark performance level must be developed via a study process to be used as a comparison. Sprint supports the use of the default performance benchmarks in the LCUG Service Quality Measurements document, version 7.0, only in the event BellSouth is unwilling to perform the necessary studies to develop an appropriate ILEC-specific benchmark. Sprint observes that performance levels will differ among ILECs, and that any benchmarks adopted in this docket must be BellSouth-specific.

Sprint believes that when BellSouth performs a benchmark study, it should be based upon equivalent experiences of BellSouth and conform to the following minimum requirements: 1) a benchmark result is provided for each reporting dimension described for the measurement when applicable; 2) the mean, standard error, and number of sample

points are disclosed for each benchmark result; 3) the study process and benchmark results may be subjected to independent audit; and 4) updates to the benchmark results should be submitted whenever changes may reasonably be expected to impact the study results, and reviewed every six months for changes in the business climate which could significantly impact the benchmark. Unless directly ordered by the Commission, no BellSouth benchmark should be utilized without the mutual agreement of the CLECs impacted by the use of the benchmark.

III. CONCLUSION

In recognition of the foregoing, Sprint urges the Commission to adopt all of its positions relating to retail analogs and benchmarks. Sprint looks forward to evaluating the proposed benchmarks and associated historical data[1] included in the benchmarking studies that the Commission required BellSouth to file in these proceedings.

Respectfully submitted this 21st day of December, 1998.

Sprint Communications Company
L.P.

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[1] See Order, Docket U-22252, Subdocket C (issued August 31, 1998), at 2: "Staff recommended that the Commission . . . (4) establish performance benchmarks only where no analogous retail service exist by ordering BellSouth to conduct special studies to establish the benchmark performance level. Such studies should rely on experiences drawn from BST's operations . . . (emphasis added)"

-and-

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Sprint – Nevada

CLEC Performance Measurement		Report Structure	Disaggregation	Planned Availability Date	Tier	Retail Analog	Comments
Pre-Ordering							
1b. Average Response Interval							
IRES[1]	Due Date Reservation	C,CA,A	Query Type and Combinations	6/99	B	Study of Data Required	Sprint has determined that this measurement does not have a useful retail analog for comparison purposes. Sprint will negotiate a benchmark after six months of data has been accumulated.
	Feature Function Availability	C,CA,A		6/99	B	Study of Data Required	
	Address Validation	C,CA,A		6/99	B	Study of Data Required	
	Telephone Number Reservation (FAX)	C,CA,A		6/99	B	Study of Data Required	
	Customer Service Record	C,CA,A	Combinations may require further disaggregation.	6/99	B	Study of Data Required	
	Service Availability	C,CA,A		6/99	B	Study of Data Required	
	Dispatch Status	C,CA,A		6/99	B	Study of Data Required	
	Rejected/Failed Inquiries	C,CA,A		6/99	B	Study of Data Required	
	Combinations (Yet to be Defined)	C,CA,A		6/99	B	Study of Data Required	
Ordering							
3a. Average Jeopardy Order Confirmation Notice Interval							
IRES		C,CA,A	SGT[2], SOT[3]	2/99	B	Study of Data Required – Sprint currently reports on FOC intervals, but not at the level of disaggregation that is required. Sprint will provide available data at the January workshop.	SGT disaggregation includes PNP and projects.
4. Average Reject Notice Interval							
IRES		C,CA,A	SGT, SOT	3/99	B	Study of Data Required. Sprint will provide any available data at the January workshop.	
8a. Percentage Flow Through Orders							
IRES		C,CA,A	SGT,SOT	6/99	B	Study of Data Required	SGT disaggregation includes LNP.

[1] IRES = Sprint ILEC web-based GUI
[2] SGT = Service Group Type
[3] SOT = Service Order Type

Report Structure: C = CLEC, CA = CLEC Aggregate, A = Sprint Affiliate, SN = Sprint Nevada

Attachment A

Sprint – Nevada

CLEC Performance Measurements	Report Structure	Disaggregation	Measurement Available Date		PM/BM Description	
Provisioning						
7b. Percent Orders Jeopardized	C,CA,A,SN	SGT	Pending	R	Capturing the retail analog for this measurement will require significant method and procedure changes as well as system changes.	Sprint currently does not put retail orders into jeopardy status (i.e. the order status is not changed). See 7c below for further information.
7c.1 Average Installation Jeopardy Notice Interval	C,CA,A,SN	SGT	Pending	R	Assuming the trial process is successful, Sprint should be able to provide a retail analog for this measurement.	Effective December 14, Sprint will begin a trial process where retail customers are contacted when an order enters jeopardy status. The trial process is expected to last through the first quarter 1999.
7c.2 Average Installation Jeopardy Notice Interval	C,CA,A,SN	SGT	Pending	R	Assuming the trial process is successful, Sprint should be able to provide a retail analog for this measurement.	Effective December 14, Sprint will begin a trial process where retail customers are contacted when an order enters jeopardy status. The trial process is expected to last through the first quarter 1999. Sprint's SOE (Service Order Entry) system does not capture time, therefore, we may not be able to report on time for this measurement.
7c.3 Average Missed Appointment Notice Interval	C,CA,A,SN	SGT	Pending	R	Assuming the trial process is successful, Sprint should be able to provide a retail analog for this measurement.	Effective December 14, Sprint will begin a trial process where retail customers are contacted when an order enters jeopardy status. The trial process is expected to last through the first quarter 1999. Sprint's SOE (Service Order Entry) system does not capture time, therefore, we may not be able to report on time for this measurement.
9b. Average Order Interval						

Report Structure: C = CLEC, CA = CLEC Aggregate, A = Sprint Affiliate, SN = Sprint Nevada

Sprint – Nevada

CLEC Performance Measurements	Report Structure	SGT Disaggregation	Measurement Available Date	PO-20	PO-20 BMA Description	Comments
	C,CA,A,SN	SGT	6/99	R	See SGT Matrix Attached	Sprint's SOE (Service Order Entry) system does not capture time, therefore, we may not be able to report on time for this measurement.
10c. Average Completion Interval						
	C,CA,A,SN	SGT	6/99	R	See SGT Matrix Attached	
11. Percent Completed Within Specified Interval						
	C,CA,A,SN	SGT	6/99	R	See SGT Matrix Attached	
12a. Percent Due Dates Missed						
	C,CA,A,SN	SGT	6/99	R	See SGT Matrix Attached	When results are out of parity, Sprint will also provide disaggregation by missed appointment codes for diagnostic purposes.
13b. Percent Missed Due Dates Due to Lack of Facilities						
	C,CA,A,SN	SGT	6/99	R	See SGT Matrix Attached	
14b. Percent Troubles within 7 Days for New Orders						
	C,CA,A,SN	SGT	6/99	R	See SGT Matrix Attached	When results are out of parity, Sprint will also provide disaggregation by high level disposition code for diagnostic purposes.
18a. Delay Order Interval to Completion Date (Lack of Facilities)						
	C,CA,A,SN	SGT	6/99	R	See SGT Matrix Attached	
19b. Percent Commitments Met – Coordinated Conversions						
	C,CA,A,SN	SGT	6/99	R	See SGT Matrix Attached	Applies to CLEC requested Coordinated orders only, including LNP orders where coordination is requested from the CLEC. Sprint's SOE (Service Order Entry) system does not capture time, therefore, we may not be able to report on time for this measurement.
20a. Held Order Interval						

Report Structure: C = CLEC, CA = CLEC Aggregate, A = Sprint Affiliate, SN = Sprint Nevada

Sprint – Nevada

CLEC Performance Measurements						
	C,CA,A,SN	SGT	6/99	R	See SGT Matrix Attached	When results are out of parity, Sprint will also provide breakout by reason code for diagnostic purposes.
7a. [illegible]						
	C,CA,A,SN	SGT	6/99	R	See SGT Matrix Attached	Sprint's SOE (Service Order Entry) system does not capture time, therefore, we may not be able to report on time for this measurement.
55. [illegible]						
	C,CA,A,SN	SGT	6/99	R	See SGT Matrix Attached	Includes LNP Trouble Reports.
22. [illegible]						
	C,CA,A,SN	SGT	6/99	R	See SGT Matrix Attached	Disaggregation includes NXX code opening troubles and LNP. When the results are out of parity for a reporting period, Sprint will provide disaggregation by maintenance disposition reason code for major categories as diagnostic data only.
23b. [illegible]						
	C,CA,A,SN	SGT	6/99	R	See SGT Matrix Attached	Disaggregation includes NXX code opening troubles and LNP. When the results are out of parity for a reporting period, Sprint will provide disaggregation by maintenance disposition reason code for major categories as diagnostic data only.
24b. [illegible]						
	C,CA,A,SN	SGT	6/99	R	See SGT Matrix Attached	Disaggregation includes NXX code opening troubles and LNP. When the results are out of parity for a reporting period, Sprint will provide disaggregation by maintenance disposition reason code for major categories as diagnostic data only.
25b. [illegible]						

Report Structure: C = CLEC, CA = CLEC Aggregate, A = Sprint Affiliate, SN = Sprint Nevada

Sprint – Nevada

CLEC Performance Measurement	Report Structure	Disaggregation	Measurement Beginning Date	Retail	Parity Determination	Comments
	C,CA,A,SN	SGT	6/99	R	See SGT Matrix Attached	Disaggregation includes NXX Code Opening Troubles When the results are out of parity for a reporting period, Sprint will provide disaggregation by maintenance disposition reason code for major categories as diagnostic data only.
26b. Percent Repeated Trouble in 30 Days Report						
	C,CA,A,SN	SGT	6/99	R	See SGT Matrix Attached	Disaggregation includes NXX code opening troubles and LNP. When the results are out of parity for a reporting period, Sprint will provide disaggregation by maintenance disposition reason code for major categories as diagnostic data only.
Network Performance						
28a. Percent Blocking on Common Trunks						
	CO, Trunk Type	Exception Reporting	6/99	R	Parity by design	Disaggregation by Central Office and Trunk Type where individual trunk types can be distinguished.
29c. Percent Blocking on Interconnection Trunks						
	CO, Trunk Type	Exception Reporting	6/99	R	Trunk blockage on Sprint final trunk groups	Disaggregation by Central Office and Trunk Type where individual trunk types can be distinguished. Only applies when Sprint has outgoing traffic to CLECs and where Sprint controls the trunk group
32. Network Outage Notification						
	C,CA,A,SN	Exception Reporting	6/99	R	Network Outage Notification Intervals to internal Sprint departments	Measured by switching, transport, network fire related, incident, outage/network blockage, 911, SS7.
64a. NXX Loaded by LERG Effective Date						
	C,CA,A,SN		6/99	R	Loading of Sprint's NXX's for the same time period	

Report Structure: C = CLEC, CA = CLEC Aggregate, A = Sprint Affiliate, SN = Sprint Nevada

Sprint – Nevada

[illegible] Performance Measurements	Report Structure	Disaggregation	Measurement Availability Date	Type	Retail Analog Description	Other
Billing						
38b. Usage Timeliness						
Resale	C,CA,A,SN		6/99	R	The retail analog will be the date when Sprint's end user usage is made available for billing.	
UNE	C,CA,A,SN		6/99	R	The retail analog will be the date when Sprint's end user usage is made available for billing.	
Access Associated with Meet Point Billing	C,CA,A,SN		6/99	R	The retail analog will be the date when Sprint's access usage is made available for billing.	
39. [illegible] Usage						
	C,CA	CLEC provided	6/99 (If data is provided by CLEC)	B	It is not reasonable or possible to establish a benchmark for this measurement until standard edits are established. Currently, edits are vastly different across CLECs and no standards exist.	Based upon CLEC supplied data.
40b. Wholesale Bill Timeliness						
Resale	C,CA,A		6/99	B	Sprint will negotiate "X" percent within 10 calendar days.	
UNE	C,CA,A		6/99	B	Sprint will negotiate "X" percent within 10 calendar days.	
Facilities / Interconnection	C,CA,A		6/99	B	Sprint will negotiate "X" percent within 10 calendar days.	
41. Usage Completeness						

Report Structure: C = CLEC, CA = CLEC Aggregate, A = Sprint Affiliate, SN = Sprint Nevada

Sprint – Nevada

CLEC Performance Measurements	Report Structure	Business Rule	Measurement Available	Tier	SQM Description	
Resale	C,CA,A,SN		6/99	R	Sprint will conduct sample study each month to determine usage timeliness for retail.	
UNE	C,CA,A,SN		3/99	R	Sprint will conduct sample study each month to determine usage timeliness for retail.	
Facilities / Interconnection	C,CA,A		3/99	B	Sprint measures this aspect of usage completeness for IXC access purposes. Sprint will provide data for review at January workshop.	
42a. Recurring Charge Completeness						
Resale	C,CA,A		6/99	B	Study of Data Required	
UNE – POTS	C,CA,A		3/99	B	Study of Data Required	Sprint has not yet determined for certain that we can split between UNE - POTS and UNE - Specials.
UNE – Specials	C,CA,A		3/99	B	Study of Data Required	Sprint has not yet determined for certain that we can split between UNE - POTS and UNE - Specials.
Facilities / Interconnection	C,CA,A		3/99	B	Study of Data Required	
43a. % Recurring Charge Completeness						
Resale	C,CA,A		6/99	B	Study of Data Required	
UNE – POTS	C,CA,A		3/99	B	Study of Data Required	Sprint has not yet determined for certain that we can split between UNE - POTS and UNE - Specials.
UNE – Specials	C,CA,A		3/99	B	Study of Data Required	Sprint has not yet determined for certain that we can split between UNE - POTS and UNE - Specials.
Facilities / Interconnection	C,CA,A		3/99	B	Study of Data Required	
44a. Bill Accuracy						

Report Structure: C = CLEC, CA = CLEC Aggregate, A = Sprint Affiliate, SN = Sprint Nevada

Sprint – Nevada

CLEC Performance Measurements	Report Structure	Disaggregation	Measurement Available Date	PM/BI	PM/BM Description	Comments
Resale	C,CA,A		6/99	B	Study of Data Required	
UNE – POTS	C,CA,A		Pending	B	Study of Data Required	Sprint has not yet determined for certain that we can split between UNE - POTS and UNE - Specials.
UNE – Specials	C,CA,A		Pending	B	Study of Data Required	Sprint has not yet determined for certain that we can split between UNE - POTS and UNE - Specials.
Facilities / Interconnection	C,CA,A		Pending	B	Study of Data Required	
44b: Accuracy of Mechanized Billing						
Resale	C,CA,A		6/99	B	Study of Data Required	
UNE – POTS	C,CA,A		2/99	B	Study of Data Required	Sprint has not yet determined for certain that we can split between UNE - POTS and UNE - Specials.
UNE – Specials	C,CA,A		2/99	B	Study of Data Required	Sprint has not yet determined for certain that we can split between UNE - POTS and UNE - Specials.
Facilities / Interconnection	C,CA,A		2/99	B	Study of Data Required	
Database Updates						
62a: Average Database Update Interval						
Directory Assistance – Resale	C,CA,A,SN		6/99	R		
Directory Assistance – Facilities	C,CA,A		6/99	B		
62a: Percent Database Accuracy						
Directory Assistance – Resale	C,CA,A,SN		Pending	R		
Directory Assistance – Facilities	C,CA,A,SN		Pending	R		
911 – Resale	C,CA,A		6/99	B		
911 – Facilities	C,CA,A		6/99	B		
61a: E911/MS Database Update Average						
911 – Resale	C,CA,A,SN		6/99	R		
911 – Facilities	C,CA,A		6/99	B		
Collocation						
82: Average Time to Respond to Collocation Requests						

Report Structure: C = CLEC, CA = CLEC Aggregate, A = Sprint Affiliate, SN = Sprint Nevada

Sprint – Nevada

CLEC Performance Measurements	Report Structure	Disaggregation	Measurement Availability Date	TR/BA	TR/BM Description	Notes
	C,CA,A	Physical Virtual	2/99	B	Sprint will negotiate 'x' percent within 10 days for tariffed and 30 days for non-tariffed	Physical Collocation: Tariffed & Non-Tariffed. Virtual Collocation: Tariffed.
83: Average time to Provide Collocation Requests						
	C,CA,A	Physical Virtual	2/99	B	Sprint will negotiate 'x' percent within 90 days	
Interfaces						
2a: Percentage of Time Interface is Available						
IRES	AC		6/99	R	System availability for retail services	
16b: Average Notification of Outages						
IRES	AC					
30a: Center Responsiveness						
Repair – POTS	AC		6/99	R	Parity by Design	
Repair – Specials	AC		6/99	R	Parity by Design	
NEAC – (CLEC Order Inquiry Center)	AC		6/99	R	Sprints Customer Care Center response time.	Sprint is also willing to consider a benchmark since the services being provided by the two centers are different.

Report Structure: C = CLEC, CA = CLEC Aggregate, A = Sprint Affiliate, SN = Sprint Nevada

Report Structure: C = CLEC, CA = CLEC Aggregate, A = Sprint Affiliate, SN = Sprint Nevada

EXHIBIT 1

COMPETITIVE LOCAL EXCHANGE CARRIER POSITION REGARDING OPERATIONS SUPPORT SYSTEMS – ANALOGS AND PERFORMANCE BENCHMARKS

Measure 1b (Average Pre-Order Query Response Time)

The FCC has ruled that pre-order queries have a retail analog, and therefore should be measured against a parity standard. While this is intuitively obvious to workshop participants, the ILECs have proposed benchmarks primarily because they claim they are unable to mechanically isolate CLEC OSS interface response time from the response time associated with retrieving data from back-office legacy systems.

CLECs cannot agree to a benchmark without further exploration of some sort of parity analog comparison for all or part of the OSS pre-ordering functions.

If a benchmark is adopted following that analysis, the benchmarks proposed by Pacific Bell for the electronic query types are in some cases counter-intuitive (Verigate service availability) or above the levels indicated by the historical data provided. The proposed benchmark for manual CSRs is unacceptable in format, and needs to be converted to an average that captures the mean performance of the current process and does not leave some portion of the overall performance completely unaccounted for. Furthermore, an analog/benchmark still needs to be proposed for manual loop qualification/characteristic queries recently added to the matrix.

GTEC did not propose any benchmarks for electronic queries in its 12/4 position paper. The proposed benchmark for manual CSRs is unacceptable and discriminatory, falling far short of the equivalent access standard that is required.

Measure 3a (Average FOC Notice Interval)

The FCC has ruled in no uncertain terms that FOC intervals have a parity analog. The ILECs claim that this measure does not have a retail analog. Given the FCC's clear mandate, CLECs are unwilling to accept a benchmark for this measure. Establishment of a benchmark with an interval greater than the retail analog would be inconsistent with the ILECs' obligations pursuant to §251(c).

If, despite the FCC's direction, the Commission adopts a benchmark, the benchmarks proposed by Pacific Bell for FOCs that receive electronic treatment or fall out for manual intervention are wholly unacceptable and discriminatory. For example, FOCs for fully-electronic (flow-through) orders returned via LEX or EDI should and can be processed and returned in a 15 – 30 minute cycle time today, and should not be subject to a 2 hour average performance measure interval. Similarly, the benchmarks proposed for manually submitted or non flow-through orders far exceed the average cycle time of the current, non-parity processes. The same can be said for all FOC notice interval benchmarks proposed by GTEC.

Measure 4 (Average Reject Notice Interval)

The FCC has ruled in no uncertain terms that FOC intervals have a parity analog. The ILECs claim that this measure does not have a retail analog. Given the FCC's clear mandate, CLECs are unwilling to accept a benchmark for this measure. Establishment of a benchmark with an interval greater than the retail analog would be inconsistent with the ILECs' obligations pursuant to §251(c).

If, despite the FCC's direction, the Commission adopts a benchmark, those proposed by Pacific Bell for fully electronic rejects are unacceptable and discriminatory. Fully electronic rejects are handled the same way as fully electronic FOCs (above), can be processed and returned in a 15 – 30 minute cycle time today. The interval also should not exclude the time spent by Pacific to initiate batch processes. Assuming resolution of the error correction process issue, any benchmark for manually submitted and non flow-through orders should be the same as whatever is set for FOC notices.

All benchmarks proposed by GTEC are similarly unacceptable and discriminatory.

Measure 8a/s (Percentage of Flow-Through Orders/ Milestones Achieved)

CLECs agree that the underlying process for developing the measure of success associated with this measure is still under review. Once agreed upon, CLECs expect that the associated standard or benchmark will be 100% of milestones achieved.

Measure 7b (Percentage of Orders Given Jeopardy)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measure 7c (Average Jeopardy Notice Interval)

CLECs find it inconsistent that ILECs have proposed a parity analog for measure 7b, but do claim that the jeopardy notice process does not have a retail analog. Therefore, CLECs are unwilling to accept a benchmark for this measure.

ILECs proposed no benchmarks in the 12/4 position papers.

Measure 10c (Average Completed Interval)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measure 11a (Percent Completed within Standard Interval)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measure 12a (Percent of Due Dates Missed)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measure 13a (Percent Company Missed Due Dates Due to Lack of Facilities)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measure 14a (Percentage Troubles in 30 Days for New Orders)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measure 14c (GTEC only--Percentage Troubles in 7 Days for New Orders)

CLECs agree with the parity analog proposed by GTEC.

Measure 18a (Delay Order Interval to Completion Date)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measure 20a (Held Order Interval)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measure 19b (Coordinated Customer Conversion)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measure 55y (Provisioning Trouble Reports)

CLECs agree with the parity analogs proposed by Pacific Bell. GTEC does not currently support the reporting of this measure.

Measure 7a (Average Completion Notice)

CLECs do not accept that Pacific Bell and GTEC do not have analogous completion notice processes that would support a parity analog for this measure. Therefore, CLECs are unwilling to accept a benchmark for this measure.

If the Commission adopts a benchmark, Pacific Bell deferred proposing a benchmark for fully automated completion notices via LEX and EDI until that process is established. The benchmark proposed by Pacific Bell presumably for all other completion notices is first of all unacceptable in format, and at the very least needs to be converted to an average that captures the mean performance of the current process and does not leave some portion of the overall performance completely unaccounted for. Moreover, it is unacceptable and discriminatory, and far exceeds

the average cycle time needed by an efficient CLEC to compete. The same can be said for GTEC's proposed benchmark.

Measure 22c (Customer Trouble Report Rate)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measure 23b (Percentage of Customer Troubles Resolved within Estimated Time)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measure 24b (Average Time to Restore)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measure 25b (POTS Out of Service Less than 24 Hours)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measure 26b (Frequency of Repeat Troubles in 30-Day Period)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measure 28a (Percent Blocking on Common Trunks)

CLECs agree that this measure should be subject to a standard or benchmark, and agree with the benchmark proposed by Pacific Bell and GTEC.

Measure 29c (Percent Blocking on Interconnection Trunks)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measure 64a (NXX Loaded by LERG Effective Date)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measures 32,36, 37, 67, 80, 81 (Network Outage Notification)

CLECs agree with the parity analogs proposed by Pacific Bell and GTEC.

Measure 38b (Usage Timeliness)

For all billing measures, the FCC has ruled that there is generally a parity analog. Therefore, CLECs are unwilling to accept a benchmark for this measure without further exploration of the exceptions proposed by Pacific Bell and GTEC functions in next week's workshops.

If exceptions are found to be appropriate, the benchmarks proposed by Pacific Bell and GTEC are unacceptable in format, and at the very least needs to be converted to an average that captures the mean performance of the current process and does not leave some portion of the overall performance completely unaccounted for.

Measure 39 (Accuracy of Usage Feed)
Measure 44b (Accuracy of Mechanized Bill Feed)

CLECs agree that the underlying process and criteria for developing the measure of success associated with these measures are still under review.

Measure 40b (Wholesale Bill Timeliness)

For all billing measures, the FCC has ruled that there is generally a parity analog. Therefore, CLECs are unwilling to accept a benchmark for this measure without further exploration of the exceptions proposed by Pacific Bell and GTEC for this function in next week's workshops.

If a benchmark is adopted following that analysis, the benchmark proposed by Pacific Bell and GTEC are unacceptable in format, and at the very least needs to be converted to an average that captures the mean performance of the current process and does not leave some portion of the overall performance completely unaccounted for.

Measure 41 (Usage Completeness)

For all billing measures, the FCC has ruled that there is generally a parity analog. Therefore, CLECs are unwilling to accept a benchmark for this measure without further exploration of the exceptions proposed by Pacific Bell and GTEC in next week's workshops.

If an exception for Interconnection Trunks was found to be appropriate, the benchmarks proposed by Pacific Bell and GTEC are unacceptable and unsupported by historical data.

Measure 42a (Recurring Charge Completeness)

For all billing measures, the FCC has ruled that there is generally a parity analog. Therefore, CLECs are unwilling to accept a benchmark for this measure without further exploration of the exceptions proposed by Pacific Bell and GTEC in next week's workshops.

If an exception for Interconnection Trunks and UNE-Specials was found to be appropriate, the benchmarks proposed by Pacific Bell and GTEC are unacceptable and unsupported by historical data.

Measure 43a (Non-Recurring Charge Completeness)

For all billing measures, the FCC has ruled that there is generally a parity analog. Therefore, CLECs are unwilling to accept a benchmark for this measure without further exploration of the exceptions proposed by Pacific Bell and GTEC in next week's workshops.

If an exception for Interconnection Trunks and UNE-Specials was found to be appropriate, the benchmarks proposed by Pacific Bell and GTEC are unacceptable and unsupported by historical data.

Measure 44a (Bill Accuracy)

For all billing measures, the FCC has ruled that there is generally a parity analog. Therefore, CLECs are unwilling to accept a benchmark for this measure without further exploration of the exceptions proposed by Pacific Bell and GTEC in next week's workshops.

If an exception for Interconnection Trunks and UNE-Specials was found to be appropriate, the benchmark proposed by Pacific Bell is unacceptable and unsupported by historical data.

Measure 62a etc. (Average Database Update Interval)

CLECs agree with the parity analogs proposed by Pacific Bell for Resale and by GTEC for Resale and UNEs. CLECs agree that there is currently no parity analog for Pacific Bell UNEs, but expect Pacific to implement the same analog for all applicable UNE transactions once Directory Listings have been integrated into the LSR in 2Q99.

For Pacific Bell UNEs that will continue to use the Directory Listing gateway, the proposed benchmark is unacceptable in format, and at the very least needs to be converted to an average that captures the mean performance of the current process and does not leave some portion of the overall performance completely unaccounted for.

Measure 62a etc. (Percent Database Accuracy)

CLECs agree with the parity analogs proposed by Pacific Bell for Resale and by GTEC for Resale and UNEs. CLECs agree that there is currently no parity analog for Pacific Bell UNEs, but expect Pacific to implement the same analog for all applicable UNE transactions once the 911 and Directory Listings have been integrated into the LSR in 2Q99.

For Pacific Bell UNEs that will continue to use the 911 and Directory Listing gateways, CLECs agree that the underlying process and criteria for developing the measure of success associated with this measure are still under review.

Measure 61a. (ALI Database Update)

CLECs agree with the parity analogs proposed by Pacific Bell for Resale and by GTEC for Resale and UNE transactions. CLECs agree that there is currently no parity analog for Pacific

Bell UNEs, but expect Pacific to implement the same analog for all applicable UNE transactions once the 911 and Directory Listings have been integrated into the LSR in 2Q99.

For UNEs that will continue to use the Pacific Bell 911 gateway, CLECs agree that a benchmark is appropriate. Pacific Bell did not propose a benchmark in its 12/4 position paper.

Measure 82 (Average Collocation Response Interval)

CLECs reluctantly agree that this measure should be subject to a standard or benchmark, but find the benchmark proposed by Pacific Bell and GTEC to be unacceptable and discriminatory. CLECs wish to explore the average interval needed by an efficient CLEC to compete in next week's workshops.

Measure 83 (Average Collocation Arrangement Interval)

CLECs reluctantly agree that this measure should be subject to a standard or benchmark, but find the benchmark proposed by Pacific Bell and GTEC to be unacceptable and discriminatory. CLECs wish to explore the average interval needed by an efficient CLEC to compete in next week's workshops.

Measure 2a (Percent Time Interface Available)

CLECs agree that this measure should be subject to a standard or benchmark, but find the benchmark proposed by Pacific Bell and GTEC to be unacceptable and discriminatory, and not in synch with historical data shared in previous workshops. Proposed benchmark equates to interface downtime of one hour out of every 100 hours, which far exceeds data quality standards or actual CLEC experience. CLECs believe that interface availability should be expressed to the fourth decimal point (e.g. 99.95%), and wish to explore the average interval needed by an efficient CLEC to compete in next week's workshops.

Measure 16b (Average Notification of System Outages)

CLECs agree that the underlying process for developing the measure of success associated with this measure is still under review.

Measure 30a (Center Responsiveness)

CLECs agree with the parity analogs proposed by Pacific Bell for the LOC.
CLECs agree that there is no parity analog for the LSC, but seek a benchmark that represents the mean vs. the outer limit of the historical data that has been submitted.

CLECs agree that there is no parity analog for GTEC, but seek a benchmark that at the very least needs to be converted to an average that captures the mean performance of the current process.

CERTIFICATE OF SERVICE

I hereby certify that I have served a true and exact copy of the within and foregoing Comments of Sprint Communications Company L.P. Regarding Retail Analogs and Benchmarks in Docket No. U-22252, Subdocket C, via facsimile as indicated by an asterisk, and by U.S. First Class Mail, postage paid and properly addressed to the following:

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This 21st day of December, 1998.

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December 22, 1998

Ref: 2744-19002

VIA HAND DELIVERY

Ms. Susan Cowart
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Baton Rouge, LA 70821-9154

In re: **Docket No. U-22252(C)** - Louisiana Public Service Commission, ex parte: In re: BellSouth Telecommunications, Inc., Service Quality Performance Measurements.

Dear Susan:

Enclosed please find the original and two copies of Comments In Response to Workshop held on November 30 and December 1, 1998 to be filed into the record of the above-referenced matter on behalf of Cox Louisiana Telcom II, L.L.C. An additional copy is included so that you may date-stamp and return same to me for our files.

Thank you for your courtesies.

Very truly yours,

Daniel J. Shapiro

DJS/lng
Enclosures

cc: All Counsel of Record
Ms. Jill Butler

cls VMC, DR, DL

145758

BEFORE THE

LOUISIANA PUBLIC SERVICE COMMISSION

LOUISIANA PUBLIC SERVICE COMMISSION, EX PARTE:

In Re: BellSouth Telecommunications, Inc., Service Quality Performance Measurements. U-22252(C)

COMMENTS OF COX LOUISIANA TELCOM II, L.L.C. IN RESPONSE TO WORKSHOP HELD ON NOVEMBER 30 AND DECEMBER 1, 1998

NOW BEFORE THIS HONORABLE COMMISSION comes Cox Louisiana Telcom II, L.L.C. ("Cox") appearing through undersigned counsel, who pursuant to Notice published December 2, 1998, submits these Comments in the above-referenced matter.

I. Introduction

The Telecommunications Act of 1996 (the "Act") requires that incumbent local exchange service carriers ("ILECs") provide services and facilities to competitive local exchange carriers ("CLECs") at "parity" with those services and facilities the ILEC provides to itself.[1] This determination is made from the point of view of the marketplace (its own end user customers). This notion of parity is critical to the development of competition through any and all of the Act's three methods of entry into the local exchange marketplace: (1) reselling the ILEC's services by purchasing at wholesale rates and selling at retail rates; (2) leasing the facilities of the ILEC through unbundled network elements ("UNEs") and interconnection for the exchange of traffic; and (3) making capital investments in network facilities (facilities based) and interconnection. The

[1] 47 U.S.C. §251(2)(C), (3), and (4).

ILEC completely controls the ability of new market entrants to be successful in entering, provisioning equally satisfactory services, and thus staying in the market through resale and the use of UNEs. Additionally, through the quality of interconnection provided, the ILEC controls the ability of a facilities-based new entrant to successfully compete.

Congress and the Federal Communications Commission ("FCC") believed that the ILECs could and would have a strong incentive to chill the two entirely dependent avenues of market entry under their control. The ILECs have a similar incentive to diminish the chances of facilities-based competitors to be successful by providing interconnection of inferior or minimal quality.

As a consequence, the Act and the FCC require "parity." "Parity" has one connotation for services and facilities provided to "Resellers"-- CLECs who resell the services and facilities of the ILECs. It has a different connotation for CLECs who are primarily facilities based, but use the ILEC's unbundled network elements to supplement or augment their own networks.

In the case of Resellers, the Reseller's performance is identical to that of the ILEC for some of the functions required to provide the service. In this context, parity means the provision of services and facilities by the ILEC such that when the ordering of service and attendant supporting functions are properly used by the Reseller, the Reseller's customers receive initial and continuing service in the same manner, with the same quality, and with the same schedules as those same customers would if they ordered service directly from the ILEC.

The provision of such service depends on actions taken both by the Reseller and by the ILEC. Arguably, the Reseller must emulate many of those functions performed by the ILEC in servicing its own customers, if the substitution is successful.

Therefore, in a resale situation there are actions which would otherwise be provided by the ILEC, but which are now performed by the Reseller. Thus, an equally efficient provider (the

Reseller) must be supported by actions taken by the ILEC which are the same as it would provide for itself. If this is the case, the end-to-end time, efficiency, and proficiency in the provision of service from an end user's perspective should be the same. Should the ILEC provide those supporting functions less efficiently to the Reseller than it provides itself, the Reseller cannot provide proper "competitive" end-to-end service. In that event the ILEC is not providing services at parity.

Parity, with regard to facilities-based providers (both those who buy UNEs and those who do not), is based on the same principles of equality. However, there are significant operational and functional differences between Reseller and UNE provisioning. The result is that parity for UNE provisioning differs from parity for resale. With UNE provisioning, the end user's service depends on both the ILEC and the facilities-based CLEC performing much more complicated functions because of the nature of network interconnection, signaling, transport, and billing. Many of these functions, in their detail, have not been historically performed by the ILECs and in fact are not performed by the ILEC in providing service to current ILEC end users today. Parity for providing unbundled network elements and interconnection to facilities-based CLECs is accomplished when a comparably efficient CLEC adds its work to that performed by the ILEC, and the outcome is equal to the outcome which would occur if the ILEC performed the counterpart work to that of the CLEC, but within the ILEC network.

It is the position of Cox that it would be possible to set in place a system of Service Quality Performance Measurements ("SQPM") which would provide the information required to determine parity at this level of granularity. And, to achieve actual facility-to-facility competition, it would be most appropriate to do so. However, for the purpose of this series of workshops and the attainment of the Commission's goal, to do so may slow the workshop process to the point where it has little merit and less benefit. This potential outcome exists at this time because, to